



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/765,838	01/18/2001	Stephen William McCahon	P 6048.10001	9260

30615 7590 11/17/2004

BIRDWELL, JANKE & DURANDO, PLC  
1100 SW SIXTH AVENUE  
SUITE 1400  
PORTLAND, OR 97204

EXAMINER

CHOW, DOON Y

ART UNIT PAPER NUMBER

2675

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/765,838

Applicant(s)

MCCAHOE ET AL.

Examiner

Dennis-Doon Chow

Art Unit

2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-32,34-36,38,39 and 42-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-32, 34-36, 38, 39, 42-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. Claims 15-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 15-16 are depended from claim 2 which is cancelled by the amendment filed 9/15/03.

***Election/Restrictions***

2. Newly submitted claims 36, 38-39 and 42-43 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Claims 36, 38-39 and 42-43 are directed to an interface for controlling an apparatus by moving a hand. Claims 36, 38-39 and 42-43 belong to a species which is different from the originally claimed species. The originally claimed species includes an interface for controlling an apparatus by rotating a ball surface (claim 35) or by moving a device over a diffusely reflecting surface (claim 34). Claims 1, 46 and 48 are generic.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 36, 38-39 and 42-43 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-14, 17-32, and 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokubo (5530456) in view of Nolte et al. (6342721).

Regarding to claims 1, 3-14, 17-18, 21, 26-29, 46-48, Kokubo discloses a device for producing a control signal to control an apparatus based on the movement of a reflecting surface, comprising: a light source for illuminating the reflecting surface, wherein the reflecting surface is a portion of a human hand; a sensor for receiving from the reflecting surface a pattern of light; and an interface circuit for producing the control signal from the sensor electrical signal.

Kokubo does not disclose the sensor being a photo-emf sensor.

Nolte discloses a photo-emf sensor for sensing light. The emf sensor comprises a plurality of pair of electrodes and gallium arsenide (see claim 9) and a gap between adjacent electrodes. The emf sensor can be constructed in many different ways (see figures). For example, the emf sensor is constructed with coaxial electrodes (see Fig. 8), sets of parallel electrodes (see Fig. 9), or sets of perpendicular electrodes (see Fig. 10).

Art Unit: 2675

It would have been obvious to one ordinary skill in the art to use Nolte's photo-emf sensor in Kokubo's device as the sensor because Nolte's emf sensor improved responsibility at constant power and detection area without the need to focus tightly, therefore, allowing the optimum beam crossing angle (col. 1, lines 61-65).

Regarding to claims 19-20, Kokubo does not explicitly disclose the light source produces linearly polarized light. However, using a light source that produces linearly polarized light in an input device is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to use the well known light source in Kokubo's device because this well known light source works as well as the Kokubo's light source.

Regarding to claims 22-23, using optics for directing or enhancing light in an optical input device is well known in the art. It would have been obvious to one of ordinary skill in the art to use the known optics in Kokubo's device for the purpose of directing or enhancing light.

Regarding to claim 24-25, amplifying and filtering a sensor signal in an optical input device are well known in the art. It would have been obvious to one ordinary skill in the art to use the well known amplifying and filtering means in Kokubo's input device because the weak sensor signal generated by Kokubo's device needs to amplify and filter so that a stronger and purer sensor signal can be generated.

Regarding claims 30 -32, using an optical input device to control a display device for representing a 3D image, a robotic device, or virtual reality device is well known in the art, Thus, it would have been obvious to one of ordinary skill in the art to

Art Unit: 2675

use Kokubo's optical input device to control a display device for representing a 3D image, a robotic device, or a virtual reality device.

5. Claims 1, 3-14, 17-32, 35, 44, and 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bidiville et al. (5288993) in view of Nolte et al. (6342721).

1, 22-23, 26-29, 46 and 48, Bidiville discloses a device (mouse, trackball, column 2, lines 33-36) for producing a control signal to control an apparatus based on the movement of a reflecting surface, comprising: a light source for illuminating the reflecting surface; a sensor for receiving from the reflecting surface a pattern of light; and an interface circuit for producing the control signal from the sensor electrical signal.

Bidiville does not disclose the sensor being a photo-emf sensor.

Nolte discloses a photo-emf sensor for sensing light. The emf sensor comprises a plurality of pair of electrodes and gallium arsenide (see claim 9) and a gap between adjacent electrodes. The emf sensor can be constructed in many different ways (see figures). For example, the emf sensor is constructed with coaxial electrodes (see Fig. 8), sets of parallel electrodes (see Fig. 9), or sets of perpendicular electrodes (see Fig. 10).

It would have been obvious to one ordinary skill in the art to use Nolte's photo-emf sensor in Bidiville's device as the sensor because Nolte's emf sensor improved responsibility at constant power and detection area without the need to focus tightly, therefore, allowing the optimum beam crossing angle (col. 1, lines 61-65).

Regarding to claims 17-21, 35, 44, and 47, Bidiville does not explicitly disclose the light source comprising a laser or a coherent light source produces linearly polarized light. However, using a light source that comprises a laser or a coherent light source produces linearly polarized light in an input device is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art to use the well known light source in Bidiville's device because this well known light source works as well as the Bidiville's light source.

Regarding to claim 24-25, amplifying and filtering a sensor signal in an optical input device are well known in the art. It would have been obvious to one ordinary skill in the art to use the well known amplifying and filtering means in Bidiville's input device because the weak sensor signal generated by Bidiville's device needs to amplify and filter so that a stronger and purer sensor signal can be generated.

Regarding claims 30 -32, using an optical input device to control a display device for representing a 3D image, a robotic device, or virtual reality device is well known in the art. Thus, it would have been obvious to one of ordinary skill in the art to use Bidiville's optical input device to control a display device for representing a 3D image, a robotic device, or a virtual reality device.

6. Claims 34 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piot et al. (6256016) in view of Nolte et al. (6342721).

Piot discloses an input device for controlling an apparatus by moving the device over a diffusely reflecting surface, comprising: a case; a support member for movably

Art Unit: 2675

supporting the case on the surface; a coherence light source disposed within the case for illuminating the surface; a sensor for receiving a corresponding moving speckle pattern of light and producing a sensor signal related to the movement; and an interface circuit for producing the control signal from the sensor signal.

Piot does not disclose the sensor being a photo-emf sensor.

Nolte discloses a photo-emf sensor for sensing light. The emf sensor comprises a plurality of pair of electrodes and gallium arsenide material (see claim 9) and a gap between adjacent electrodes. Nolte further discloses the emf sensor can be constructed in many different ways (see figures). For example, the emf sensor can be constructed with coaxial electrodes (see Fig. 8), sets of parallel electrodes (see Fig. 9), or sets of perpendicular electrodes (see Fig. 10).

It would have been obvious to one ordinary skill in the art to use Nolte's photo-emf sensor in Piot's device as the sensor because Nolte's emf sensor improved responsibility at constant power and detection area without the need to focus tightly, therefore, allowing the optimum beam crossing angle (col. 1, lines 61-65).

### ***Response to Arguments***

7. Applicant's arguments filed on 7/23/04 have been fully considered but they are not persuasive.

Applicant traverses the restriction requirement because claim 36, from which claims 38, 39, 42, and depend, was an original claim. The examiner disagrees because the original claims did not recite the limitation of ***the hand surface***.



Applicant argues that Kokubo, Bidiville and Piot all operate on entirely different principles. First, they are imaging systems; that is, they require a lens for producing at the sensor an image of the object surface illuminated by the light source. Applicant also states that applicant's invention may include, but does not require, a lens. The examiner disagrees with applicant's arguments because applicant clearly teaches a lens can be used. In addition, applicant's arguments are irrelevant because the claimed limitations do not exclude the use of a lens. Applicant cannot show non-obviousness by attacking references individually where as here the rejections are based on combination of references. In re Keller, 208 USPQ 871 (CCPA 1981).

Applicant argues that Kokubo, Bidiville and Piot teach away from Nolte because Kokubo, Bidiville and Piot teaching the use of image position analysis, rather than notion generated differential EMF. The examiner disagrees with applicant arguments because all of Kokubo, Bidiville, Piot, and Nolte teach using a light source and a light sensor for sensing a movement of an object. It is clear that all these references teach the same sensing function.

### ***Conclusion***

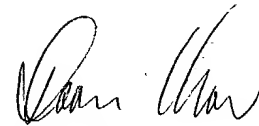
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis-Doon Chow whose telephone number is 703-305-4398. The examiner can normally be reached on 8:30-6:00, Alternate Monday off.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Art Unit: 2675

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

D. Chow  
November 8, 2004



DENNIS-DOON CHOW  
PRIMARY EXAMINER